

1.0 GENERAL

1.1 These drawings are to be read in conjunction with Mechanical, and Electrical drawings. Dimensions shown shall not be used for construction until they have been checked against final Mechanical, and Electrical drawings. Any discrepancies shall be brought to the Departmental Representative's attention promptly. THESE DRAWINGS ARE NOT TO BE SCALED.

1.2 Substitution of Materials: Substitution of materials shown on the structural drawings must be approved by the Departmental Representative. Proposed substitute materials shall be submitted along with engineering data for approval before being installed on the site. Test results and/or analyses supporting such certification must be acceptable to the Departmental Representative.

1.3 Construction Methods and Sequence: It is the contractor's responsibility to determine the methods and sequence of construction. Construction methods shall meet necessary requirements for safety and good workmanship. When necessary the contractor shall provide certification by his engineer that methods used meet these requirements.

5.0 SHOP DRAWINGS

5.1 Shop Drawings Required: Provide shop drawings for reinforcing steel. Shop drawings shall include connections, sequence of construction, material grades, design loads, and any other details relevant to the design or execution of the work.

5.2 Engineer's Seal: Shop drawings for structural steel, steel joists, formwork and shoring, and structural precast concrete shall be sealed and signed by a Professional Engineer licensed to practice in the province of Ontario.

5.3 Review of Shop Drawings: The Structural Engineer requires a minimum of five working days for review of shop drawings.

6.0 INSPECTION

6.1 Notice of Inspection: The Contractor shall provide at least ONE FULL working day's notice of when on-site inspections are required.

6.2 Rejection of Work: Work found not to be in compliance with the drawings, specifications, applicable standards, or good workmanship will be rejected by the Departmental Representative. Rejected work shall be corrected by the Contractor at no cost to the Departmental Representative.

6.3 Concrete Reinforcement: Reinforcement is to be inspected by the Departmental Representative prior to placing concrete.

2.0 FOUNDATIONS

2.1 Soils Report: The foundations of the structure have been based upon a bearing pressure of 225 kPa (SLS) and 225 kPa (ULS). Soils conditions to be confirmed by the Departmental Representative during excavation.

2.2 Soils Inspections: Founding soils shall be inspected by the Departmental Representative before footings are poured to confirm bearing capacity as listed in the soils report, on the plans, and/or in the footing schedule.

2.3 Water Control: Dewatering of the site shall be done in accordance with the Departmental Representative's instructions.

3.0 STANDARDS

3.1 The most current edition of the following standards shall govern the materials to be used in construction. The Structural Engineer may disallow any material or product regardless of compliance with these standards if it is considered unsuitable for a particular application.

3.1.1 Steel:
 Hot-rolled Sections - CSA-G40.20-13/G40.21-13
 Plate - CSA-G40.20-13/G40.21-13
 Common Bolts - ASTM A307
 High Strength Bolts - ASTM A325M
 Anchor Bolts - ASTM A36
 Hollow Structural Sections - CSA-G40.20-13/G40.21-13
 Shop Primer - CAN/CSSB/CSA-216602:14
 Zinc-Rich Primer - CAN/CSSB/CSA-216602:14
 Hot Dipped Galvanizing - CAN/CSA-G401-14
 Welding Electrodes - CAN/CSA-W117.2-12

3.1.2 Reinforced or Plain Concrete:
 Welded Wire Mesh - G30.18-09 400MPa
 Reinforcing Bars - CAN/CSA-G30.18-09 400MPa
 Weldable Reinforcing Bars - CAN/CSA-G30.18-09 400MPa
 Epoxy Coatings - ASTM A775
 Air-Entraining Admixtures - CAN3-A266.1-M
 Chemical Admixtures - CAN3-A266.2-M
 Superplasticizing Admixtures - CAN3-A266.6-M
 Curing Compounds - ASTM C309

3.2 The most current edition of the following standards shall govern the design, quality control, and execution of the work.

General 2012 Ontario Building Code
 Welding CSA W59-13
 Concrete CSA A23.1-14, A23.2-14, A23.3-14

4. CONCRETE

4.1 Strengths at 28 days: (u/ noted otherwise on plans)

Footings..... 25MPa
 Foundation Walls..... 25MPa
 Slabs on Grade..... 25MPa
 Suspended Parking Slabs..... 35MPa

4.2 Slump
 Concrete slump shall be 75mm MAX.

4.3 Maximum aggregate size:
 The maximum nominal aggregate size shall be 20mm

4.4 Air Entrainment:
 Provide seven percent air entrainment for all concrete exposed to freezing temperatures or deicing chemicals. This includes but is not limited to suspended parking slabs, exterior slabs and stairs, slabs on grade in parking areas, and uninsulated portions of exterior foundation walls and piers. Air entrainment shall be 5-7 %.

4.5 Construction Joints:
 4.5.1 Walls:
 Joints shall be rough (+/- 8 mm), free of loose aggregate, debris, laitance, and form oil

4.6 Concrete Cover to Reinforcement:

Footings	75mm
Slabs on Grade	75mm
Walls and Foundation Walls:	
20M and smaller:	30mm
25M:	40mm
30M:	45mm
Suspended Slabs:	
20M and smaller:	30mm
25M:	40mm
30M:	45mm

4.7 Testing:
 Testing procedures shall comply with standard CAN/CSA-A23.2. The tests required by this standard include but are not limited to:
 - slump
 - air content, where applicable
 - three compressive test cylinders

These tests shall be performed for every 100 cubic meters (130 cubic yards) of concrete and each class of concrete placed each day or as required by CAN/CSA-A23.1.

4.8 In-Situ Concrete Strength:
 Tests to determine in-situ concrete strength shall be performed as required by the Structural Engineer. These tests may include compression tests of field-cured or core-drilled samples, impact hammer tests, Lok-Tests, or other tests as the project dictates.

4.9 Formwork:
 4.9.1 Stripping
 No slab formwork shall be stripped until concrete has reached 75% of its specified compressive strength.

4.9.2 Design
 Formwork, shoring, and reshoring shall be designed by the Contractor's Engineer in accordance with CSA Standards CAN3-A23.1 and S269.1.

4.9.3 Form Spacers and Ties
 Wood blocking shall not be used as form spacers. Spacers and ties that remain cast in the concrete shall be a galvanized metallic type or plastic. Form spacers shall not be visible after stripping of formwork. Holes and penetrations in the concrete left by removal of form spacers and ties shall be completely filled with cementitious grout.

4.9.4 Reinforcement Chairs
 Chairing devices shall be plastic or galvanized metal.

4.9.5 Shop Drawings
 Formwork shop drawings shall show construction details, design loads, sequence of concrete placing, sequence and timing of formwork stripping, and reshoring required.

4.9.6 Cleaning
 Formwork shall be cleaned of dirt, sawdust, unused reinforcing chairs, wire, reinforcing tags, and other foreign material before placing concrete. Particular care shall be taken to remove foreign material that has collected in the tops of column and wall forms.

CONCRETE COMPRESSIVE STRENGTH

BAR SIZE	20MPa	25MPa	30MPa	35MPa	40MPa
10M	450mm	450mm	450mm	450mm	450mm
15M	625mm	625mm	625mm	625mm	625mm
20M	875mm	775mm	775mm	775mm	775mm
25M	1450mm	1300mm	1175mm	1100mm	
30M	2025mm	1825mm	1650mm	1525mm	
35M	2900mm	2575mm	2350mm	2175mm	

Notes:
 1) Reinforcement yield strength=400MPa
 2) These splice lengths apply for normal density concrete only.
 3) Multiply these splice lengths by 1.4 for top bars.
 4) When splicing bars of different sizes, the splice length shall be the larger of: the development length of the larger bar or the splice length of the smaller bar.

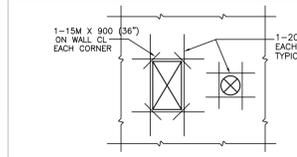
TENSION SPLICES FOR REINFORCEMENT

NORMAL SPLICE LENGTH

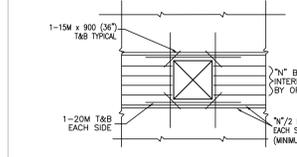
BAR SIZE	SPLICE LENGTH
10M	330mm
15M	465mm
20M	570mm
25M	735mm
30M	875mm
35M	1040mm

Notes:
 1) Reinforcement yield strength=400MPa
 2) These splice lengths apply for normal density concrete only.
 3) When splicing bars of different sizes, the splice length shall be the larger of: the development length of the larger bar or the splice length of the smaller bar.

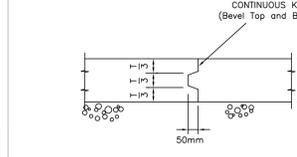
COMPRESSION SPLICES FOR REINFORCEMENT



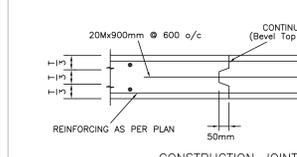
SUPPLEMENTARY REINFORCING AT OPENINGS IN WALLS



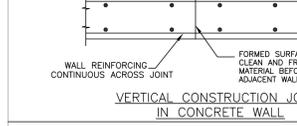
SUPPLEMENTARY REINFORCING AT OPENINGS IN SLABS



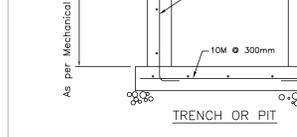
CONSTRUCTION JOINT IN SLAB ON GRADE



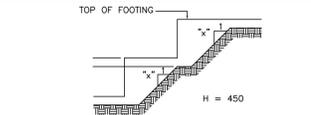
CONSTRUCTION JOINT IN SUSPENDED SLAB



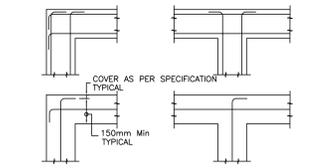
VERTICAL CONSTRUCTION JOINT IN CONCRETE WALL



TRENCH OR PIT



SOIL TYPE	MAXIMUM "x"
COHESIVE	0.5
GRANULAR	1.0
SOUND ROCK	2.0



REINFORCEMENT DETAILS AT WALL INTERSECTIONS

DESIGN LOADS:

ROOF: LIVE LOAD = 12 kPa
 DEAD LOAD (LANDSCAPE DECK):
 500 mm LANDSCAPING (18 kN/m³) = 9 kPa;
 450 mm CONCRETE SLAB = 11.25 kPa;
 TOTAL DEAD LOAD = 20.25 kPa.

GROUND FLOOR: LIVE LOAD = 4.8 kPa (USE & OCCUPANCY);

Public Works and Government Services Canada / **Travaux publics et Services gouvernementaux Canada**

Real Property Branch
 Professional and Technical Services Sector
 Direction générale des biens immobilières
 Secteur des services professionnels et techniques

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revisions	description	date
3	100% ISSUED FOR TENDER	30/01/15
2	99% REVIEW	12/12/14
1	66% SUBMISSION	17/01/14

A detail no. no. du détail
 B location drawing no. sur dessin no.
 C drawing no. dessin no.

project 1426 ST-JOSEPH BLVD. WATERMAIN RECONSTRUCTION OTTAWA, ONTARIO

drawing 020045.006

GENERAL NOTES AND DETAILS FOR PUMP STATION

designed	V.A.	conçu
date	2015/01/30	(yyyy/mm/dd)
drawn	V.A.	dessiné
date	2015/01/30	(yyyy/mm/dd)
reviewed	J.S.H.	examiné
date	2015/01/30	(yyyy/mm/dd)
approved	J.S.H.	approuvé
date		(yyyy/mm/dd)
Tender	D.MOIR	Submission
Project Manager	2015/01/30	Administrateur de projets
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drawing no.		no. du dessin

